in the form of a Fourier series, which he described in the *Philosophical Magazine* for July, 1894.

Henrici will be remembered chiefly as a great teacher. He had learned during his early struggle for a livelihood in London to aim at perfection in form of expression, and he refrained from publishing anything until he felt satisfied as to its form. But for this characteristic we might have had his books on "Similar Figures" and "Vector Analysis."

As one of the large body of Henrici's pupils, the present writer is able to bear testimony to the singular lucidity of his teaching and to his readiness to explain difficulties at all times. With qualities such as these it is easy to understand the mingled respect and affection with which his pupils regarded him. They feel that a great master of his art has passed to his rest.

M. J. M. HILL.

NOTES.

THE epidemic of influenza which has ravaged the country during the last month or so seems to be abating, at least in London, where, however, 1256 deaths were attributed to it in the week ending October 26. The experience of previous epidemics in London has been that excessive mortality from influenza in any single epidemic does not continue beyond a period of about six weeks. Contrary to what has been stated in the public Press, a summer epidemic like that of last July is unusual, and the occurrence of a second epidemic like the present within three months of a previous one is almost unknown. While the influenza bacillus was found only in a small proportion of cases in July, now it seems to be fairly prevalent, but the pneumonia complicating the disease, and to which the mortality is chiefly attributable, appears to be caused mainly by secondary infection with the pneumococcus or the streptococcus. In a small localised influenza epidemic which occurred in a hospital in France Majors Foster and Cookson establish an incubation period of forty-eight hours for the disease, also that infection spreads only within a narrow radius (*Lancet*, November 2, p. 588).

A SCHEME for a national organisation, to be called the Scientific Research Association, to secure a more effective promotion, co-ordination, and endowment of research has been developed recently by a small provisional committee, the acting secretary of which is Mr. A. G. Tansley, F.R.S., Grantchester, Cambridge. The idea is to set up machinery for collecting intelligence as to what is being done and what are the current and prospective needs. Subject committees would act as intelligence bureaux, which would put workers in touch with the best existing facilities for pursuing research in the various branches of science, and at the same time collect information as to current work and needs. This information would be co-ordinated by the council of the association, which would act as an intermediary between the subject committees on one hand, and Government and public bodies disposing of funds available for the endowment of research on the other. The aim of the association would be in no way to interfere with the activities of any existing body, but to co-operate intimately with all bodies and institutions concerned with research, and to act as a co-ordinating agency in all that relates to research. Adherence to the aims of the association has been obtained from a large number of representative men of science throughout the country, and it is hoped to bring the association into relationship with the whole body of research workers in pure science.

THE Lord Mayor of Manchester (Sir Alexander Porter) presided on October 31 at a meeting which he had convened to consider the question of holding an exhibition of British scientific products in Manchester in December and January next. The meeting decided that the proposed exhibition should be held, and that the offer of the City Council to make the building of the College of Technology available for the purpose should be accepted. The proposed exhibition will be similar to that organised by the British Science Guild, which attracted so much attention when it was held recently in King's College, London. Its object will be to show Lancashire people, especially manufacturers and merchants, how many of the products which before the war they were accustomed to obtain from Central Europe are now being manufactured in this country, and how many altogether new products have been invented in Britain since the war began. The exhibition should also give an impetus to the application of science to the industries of Lancashire by showing how much some of these industries, as well as other British industries, owe to the work which British men of science have accomplished during the war. A sufficient sum of money has been guaranteed to cover the necessary expenses of the exhibition. It is hoped that further contributions to the guarantee fund will continue to be received so as to enable the scope of the exhibition to be extended and to include exhibits that will be of special interest to Lancashire. Offers to contribute to the guarantee fund and all other communications relating to the exhibition should be addressed to the Secretary of the Exhibition Committee, College of Technology, Manchester.

WE learn from the *British Medical Journal* that the following resolutions, recently adopted unanimously by the Paris Academy of Sciences of the Institute of France, were unanimously endorsed by the Academy of Medicine on October 15:—(1) The academy, believing personal relations between scientific men of the two groups of belligerents to be impossible until reparation and expiation of the crimes which have put the Central Empires under the ban of mankind permit them again to enter the concert of civilised nations, has adopted the following resolutions:—(2) The Central Empires shall be compelled by a provision of the treaty of peace to retire from international scientific associations established by diplomatic conventions and implying personal relations between the members. This exclusion would not apply to common action solely concerning administrative relations indispensable between such public service as those affecting the regulation of navigation, railways, telegraphs, etc. (3) As soon as circumstances allow, those international conventions not belonging to the two categories noted above shall be denounced by each of the competent groups of the Entente and of the United States of America in accordance with the statutes and regulations of each of them. New associations recognised to be needed for the progress of the sciences and their application shall be established forthwith by the Allies and the United States with the contingent co-operation of neutrals. (4) The Governments of the Allied countries and of the United States shall refrain from sending delegates to any international assembly at which representatives of the Central Empires would be expected to figure. It is desirable that the nationals of the Entente countries and of the United States should adopt the same line of conduct and not take part in any enterprise in which the nationals of the Empires would collaborate. (5) Inquiry should be made as to the steps to be taken to establish intimate collaboration between the Allies and the United States, particularly in the domain of allied science and in the publication of certain bibliographical works.

THE death is announced of Prof. Samuel Wendell Williston, of Chicago, aged sixty-six. Prof. Williston began his career as one of the collectors employed by Prof. O. C. Marsh in the 'seventies to obtain vertebrate fossils from the western territories of the United States. During the winter season he helped Prof. Marsh to prepare the fossils in the Yale University Museum, and at the same time he pursued medical studies which eventually resulted in his graduating as M.D. He was always a keen naturalist, and, being prevented from publishing his observations on palæontology, he turned to dipterous insects, and soon became one of the leading authorities in America on that branch of entomology. Leaving Prof. Marsh in the early 'eighties, Williston was appointed professor of geology and palæontology in the State University of Kansas, at Lawrence, where he established a flourishing school and brought together a great collection of Kansas fossils. Among numerous important papers he wrote especially on the Pterodactyls and the marine reptiles found in the chalk of Kansas. In 1902 Prof. Williston removed to the newly founded chair of palæontology in the University of Chicago, where he not only continued his researches on Cretaceous reptiles, but also collected and investigated the still more interesting Permian reptiles from Texas and Illinois. His writings form no inconsiderable part of the valuable contributions to vertebrate palæontology received from America during the last thirty years, and several of his devoted pupils and associates have followed worthily in his wake.

BY the death on October 23, at ninety years of age, of Mr. Robert Brudenell Carter, consulting ophthalmic surgeon to St. George's Hospital, the medical profession and the public have lost a striking personality. Since the Crimean War to within a few weeks of his death Mr. Brudenell Carter was a constant contributor to the *Times*. On most medical subjects in which the public was directly interested he contributed leading articles, which were always marked by clear language and sound reasoning. He wrote extensively also on hygienic and educational matters. As examples may be mentioned his paper on the constituents of London dust and its effects on health. His conclusions led him to advocate the substitution in our houses of parquet floors for carpets and the abolition, so far as possible, of blinds and curtains—recommendations which he conscientiously carried out in his own house. His pamphlet on "The Artificial Production of Stupidity in Schools" might still be read with profit by our educational authorities. He was always a strenuous opponent of the so-called system of homœopathy, and his correspondence with the late Lord Grimthorpe in the *Times* on this subject will be remembered. With his purely medical writings, which were numerous, this is not the place to deal, but his book entitled "Eyesight Good and Bad," which was written for the general public, may be mentioned. It was a succinct and clear explanation of the physiology of normal vision and of the causes of its common defects. Mr. Brudenell Carter was an active member of the General Medical Council, a body little known to the public, the most important function of which is to protect the public against improper practices by medical men. The writer was privileged to see him on his ninetieth birthday, and found him lying on a sofa, in full possession of his faculties, and although his voice was weak, he discussed freely and with his usual good sense the topics of the day.

THE Christmas course of juvenile lectures at the Royal Institution will be delivered by Prof. D'Arcy Thompson upon the subject of "The Fish of the Sea."

THE FitzPatrick lectures of the Royal College of Physicians of London will be given at the college at 5 o'clock on November 12 and 14 by Dr. Arnold Chaplin. The subject will be "Medicine in England during the Reign of George III."

THE death is announced in the *British Medical Journal* of Dr. F. F. Wesbrook, president of the University of British Columbia, formerly professor of pathology in the University of Manitoba, and professor of public health and bacteriology in the University of Minnesota.

THE death is announced, in his sixty-fourth year, of Prof. William Leslie Hooper, who had been professor of electrical engineering at Tufts College, Massachusetts, since 1890. He had previously been for seven years assistant professor of physics in the same institution. Prof. Hooper was the author of "Electrical Problems," published in 1902.

MAJOR BAIRD, Parliamentary Secretary to the Air Board, announced in the House of Commons on November 3 that the post of Medical Administrator of the Board has been offered to Col. M. H. G. Fell, C.M.G. One of the conditions of the office is that the Administrator will be guided by the principles laid down by the Watson-Cheyne Committee. Col. Fell is at present engaged in visiting stations in this country and abroad, and his answer has not yet been received.

IN the *Times* of October 29 Col. H. A. Haines describes the discovery of a human skeleton with military equipment in a shallow grave in the chalk near Rochester, Kent. The feet of the skeleton were directed eastward, a spear-head lay near the right shoulder, and the boss of a shield was found over the ankles. Another piece of iron occurred behind the waist. Writing in the same newspaper on October 31, Sir Hercules Read points out that the burial may be regarded as that of a Jutish settler in Kent of the fifth or sixth century. The fragment of iron near the waist may have been either a knife or a strike-a-light to be used with a flint.

THE second national reunion of the Argentine Society of Natural Sciences will be held in Mendoza in the spring of 1919. We have just received Nos. 14 to 16 of *Physis*, the society's journal, which shows much activity, especially in entomology and botany. In No. 16 Mr. Carlos Ameghino returns to the subject of fossil man at Miramar, where the numerous implements are supposed to be contemporaneous with the remains of extinct mammals. Among other implements he describes and figures bolas of the modern South American type made of fossil bone. He arrives at the remarkable conclusion that while Europe was still inhabited by men of the Neanderthal race, Argentina was already peopled by advanced tribes of *Homo sapiens*.

THE annual Harveian oration was delivered by Dr. Percy Kidd at the Royal College of Physicians on October 18. The subject was the doctrine of consumption in Harvey's time and to-day. Dr. Kidd surveyed the views of medical writers on phthisis or consumption from the time of Hippocrates. The seventeenth century, which produced Harvey's great work on the circulation, constituted an epoch in the study of consumption, and two names stand out preeminently in this connection—Franciscus Sylvius and Richard Morton. The latter had a clear conception of the nature of consumption of the lungs, stated his opinion that the formation of tubercles constitutes the first stage in the phthisical process, and recognised a special scrofulous variety of the disease. Both Sylvius and Morton insisted upon the contagious nature of the affection. The work and views of subsequent investigators were reviewed, and, finally, the recent results of a statistical investigation by Brownlee, indicating that there are at least two types of phthisis, were commented upon.

IN connection with the Sir Walter Raleigh tercentenary, of which we gave an account last week, we are reminded that there is some reason for regarding Raleigh as one of the pioneers of evolution. He was not far from the general idea of transformism. Thus in his "History of the World" (book i., chap. vii.) he says: "For mine owne opinion I find no difference but only in magnitude between the Cat of Europe and the Ounce of India. . . . The common crow and rooke of India is full of red feathers in the droun'd and low islands of Caribana, and the blackbird and thrush hath his feathers mixt with black and carnation in the north parts of Virginia. The Dog-fish of England is the Sharke of the South Ocean." What is suggested is certainly that one kind of animal may have diverse forms in diverse conditions. Raleigh goes on to say that differences in colour and magnitude cannot make "a difference of Species," using the argument that if they did it would be necessary to regard negroes, not as men, but as some kind of strange beasts; "and so the giants of the South America should be of another kind than the people of this part of the World"; and he adds: "We also see it dayly that the nature of fruits are changed by transplantation." It need scarcely be said that Raleigh did not see the transformation of species as Darwin saw it, but the general idea of transformism was surely his.

A COLLISION, when the vessel on which he was returning on leave from West Africa was within three hours' steaming from Holyhead, caused the death, on October 3, of Mr. C. O. Farquharson, mycologist in Nigeria. A graduate in arts and in science of the University of Aberdeen, Mr. Farquharson was a student of the best type, more keen to know thoroughly what he set himself to learn than preoccupied with mere success in examinations. Botany was especially attractive to him, and he proved himself acute and trustworthy in personal investigation of problems in both field and laboratory. He devoted attention to the parasitic fungi, and gladly accepted the position of mycologist in Nigeria. Mr. Farquharson threw himself into the duties with whole-hearted enthusiasm, striving to gain the fullest knowledge of the methods likely to prove helpful in the discovery of the causes and treatment of diseases of economic plants, not confining his attention to those due to fungi. He was also interested in the endeavour to obtain improved races of such plants, whether native or introduced. Moreover, he did good service in the investigation of the botany and entomology of Nigeria, as evinced by a paper on the Myxomycetes of that territory in the *Journal of Botany* in 1916, and by collections and notes on insects communicated to Prof. Poulton. Mr. Farquharson first began to study insects under the influence of Mr. W. A. Lamborn, who, as Government entomologist, became his colleague at Moor Plantation, Ibadan, Southern Nigeria, in May, 1913. After Mr. Lamborn's departure in May, 1914, he corresponded with Prof. Poulton, his last letter being dated August 31, 1918, the day before he sailed in the ill-fated *Burutu*. Mr. Farquharson was a very acute and patient naturalist, who was instinctively drawn to attack the most obscure and difficult problems of bionomics. Many of his valuable observations on insect life, especially on ants and the forms associated with them, are published in the Proceedings of the Entomological Society from December, 1913, onwards, and it is confidently believed that the appearance of his unpublished work will show even more clearly how high were the hopes that perished with him. Mr. Farquharson's character and disposition were such as to win him affection and respect, and his death brings a sense of grievous loss to those who knew him intimately. His place will be difficult to fill. He was in his thirty-first year.

THE Calcutta Mint has overcome the difficulty of supplying metals for coinage during the war owing to increasing demands and recent withdrawals of the old copper pieces. The difficulty of procuring nickel was serious, until it was noticed that the ordnance factories were advertising for sale as scrap large quantities of cupro-nickel derived from used bullets, but contaminated with lead. This metal was utilised in the Mint, and as many as 226 tons of cupro-nickel were used in this way in producing 2,750,000 two-anna nickel pieces issued during the closing months of last year.

IN the Journal of the Royal Anthropological Institute (vol. xlviii., part i., 1918) Prof. H. J. Fleure and Miss L. Winstanley contribute a paper on "Anthropology and our Older Histories." The Irish chronicler Nennius, the "Brut," and Geoffrey of Monmouth are examined in connection with early race movements. The evidence is naturally scrappy and uncertain, but the authors suggest that studies of this kind may be a connecting link between history and anthropology, the distributional examination of place-names being of linguistic value. "Thus archæology and anthropology hint at an unsuspected value of the older and supposedly legendary historians, and suggest that even the chronology of these older historians may have a good deal behind it."

AN interesting case of complete absence of sensations from skin receptors, and of some other special senses, is described in the *Lancet* of October 19. The senses absent are touch, both superficial and deep, pain, heat and cold, muscular sense, taste, and smell. The state has been present for twenty years, but the subject possesses more than the average intelligence. In the absence of guidance from the eyes, he is unable to make any movement as requested, saying that he has no knowledge of whether he is making any movement or not. On the other hand, the more automatic movements of walking and swimming, not requiring conscious co-operation, can be executed correctly without the eyes. It is also clear that the proprioceptive mechanism of the muscles is intact, since, with eyes closed, the limbs can be placed by another person in any position and remain there (Sherrington's "plastic" phenomenon), although the patient is unaware of what position they are in. With visual control, all movements are perfectly normally executed. The subject is ignorant of any feelings of fatigue, and seems to be devoid of most forms of emotion. He has no love of country or of home, and makes neither friends nor enemies. Nevertheless, he is an efficient soldier, and always willing to help in hospital work.

The annual report of the Department of Fisheries for Bengal and Bihar and Orissa is officially limited to a maximum of eight pages. Mr. Southwell, the Director of Fisheries, gives a short summary of the work of his department, a list of papers relating to marine and fresh-water biology published elsewhere, and a general account of the fishing industry so far as it comes within his cognisance.

The annual report of the Dove Marine Laboratory at Cullercoats deals with marine biological investigations carried on along the same general lines as in past years. The report on the routine examination of samples of local herrings is interesting in that it suggests changes due to restricted fishing on the East Coast. Up to 1915 the herring shoals were characterised by the predominance of fish of four years of age (that is, herrings with three winter rings on the scales), but in 1916 and 1917 the North-East English shoals contained a majority of five-year-olds. Spawning apparently occurred at the end of August and the beginning of September. Other papers in Prof. Meek's report deal with the growth rates and numbers of ecdyses in Crustacea and with plankton and general faunistic research. Prof. Meek's paper on the growth of Crustacea is noteworthy as an attempt to clear up much that is confusing with regard to this matter.

The *Fish Trades Gazette* of October 26 contains an interesting article on "Fisheries Reconstruction in Germany," in which the author summarises a memorandum prepared by the Economic Union of the German Deep-sea Fisheries. A great deal is being done in the sphere of technical and scientific research. At Munich "there has been founded a great research institute for the study of the chemistry of food—a direct result of the difficulties from the war—with, in the meantime, a temporary home in the University. It is meant to serve the interests of the whole Empire, and will be richly endowed. A sum of from 3,000,000 to 4,000,000 marks (150,000*l.* to 200,000*l.*) has been set aside for building and equipment, and the annual endowment will be between 100,000 and 200,000 marks (5000*l.* to 10,000*l.*). The director is Prof. Dr. Theodor Paull. . . . In the section dealing with fish it is intended to make researches on the chemical composition and digestibility of fish of every species, fresh and preserved; on the influence of cold and other agents on its preservation and transport; on various methods of preparing fish for the table; and on the so-called 'fish-poison,' or poisoning by bad fish."

Now that ferro-concrete shipbuilding seems to have come to stay, it is interesting to note that, according to *Hansa* for September 14, no composition is necessary to protect ships' hulls from attack by sea-water. This opinion is expressed as the result of several observations on ferro-concrete structures in German harbours.

A factory has been started in Sweden, according to *Teknisk Ukeblad* for August 30, for extracting oil from alum schist. Large quantities of this schist are found in the Lamma Nerika district, yielding benzine and crude oils. The latter can be used for oil-engines or converted into paraffin and lubricating oils. The factory can treat 30,000 tons of schist per annum, giving 1200 tons of oil. The supply of schist in Sweden is practically inexhaustible, and other similar factories will shortly be started.

Water is decomposed by electric current at the rate of 0·3354 grm. per ampere per hour. The products are 0·416 litre of hydrogen and 0·208 litre of oxygen from the quantity of water named. If, when suitable arrangements for setting up hydraulic pressure have been made, a current be passed through the water, decomposition will take place, and the gases generated will produce pressure of any desired intensity. According to the *Chemiker-Zeitung* (September 4), it is possible to produce pressures as high as 1860 atmospheres in this way.

In an article in the May and July issues of the *New Zealand Journal of Science and Technology* Mr. M. A. Eliott describes the growth of the frozen-meat industry of New Zealand, and maintains that the demands on it will be still further increased after the war. At the present time about six million sheep and lambs and a quarter of a million cattle are exported per annum, a fleet of fifty properly insulated steamers equipped with refrigerating machinery, and making two and a half journeys per annum, being engaged in the trade. Cold stores have recently been erected in the Colony capable of holding one year's export. The Home Government is alive to the importance of a food supply such as this, and has appointed a Food Investigation Board to deal with the problems arising out of the preservation, storage, and transport of food materials.

Prof. J. T. Lundbye, in a paper read recently before the Danish Society of Engineers, gave an account of the various units of light used in European countries, and the intensity of light required for satisfactory illumination under various conditions. A simple method is given (*Ingeniøren*, August 28) for obtaining the intensity of light by measuring the distance at which letters of known size can be read with different lights. Up to a certain point this distance increases very rapidly with the intensity of light, but when the intensity exceeds a certain limit the increase in distance is small. A pair of smoked glasses, which intercept a known quantity of light, and a decimal rule are the only apparatus required. The luminous intensity is found by measuring the distance at which a given specimen of print can be seen through smoked glasses, and then measuring the distance at which it can be seen without them. The ratio between these two operations forms a measure of the luminous intensity.

Prof. Kammerlingh Onnes has recently succeeded in demonstrating the possibility of the existence of permanent electric currents without the action of an e.m.f. The resistance of conductors vanishes very suddenly below certain critical temperatures, and a conductor brought to the non-conducting state can carry currents up to a critical value, above which the resistance suddenly reappears. The super-conducting state is not attainable when the conductor is exposed to a magnetic field above a critical value. Tests are described (*Schweizerische Elektrotechnische Zeitschrift*, August 31) in which a current was induced in a lead spiral in its super-conducting state, and continued to flow with a decrease of only 1 per cent. per hour.

It is common knowledge that the general methods of running boiler plants are not efficient. A good deal of attention has been given recently in the technical Press to the scientific control of steam-raising plants, and the first of a series of articles by Messrs. Brownlie, Compston, and Royse on exact data on the running of steam-boiler plants appears in *Engineering* for November 1. During the past ten years the authors have tested 250 typical steam-boiler plants, comprising 1000 boilers. The present article deals with the efficiency of the economiser. This appliance generally consists of rows of vertical cast-iron pipes placed in the flue between the boilers and the chimney. The feed-water passes through the pipes on its way to the boilers, and takes up some of the heat from the waste furnace gases, which thus reach the base of the chimney at a temperature lower than would otherwise be the case. The exterior surfaces of the tubes are kept clean by scrapers, which travel automatically up and down the tubes. In 155 plants fitted with economisers the average efficiency of the appliance was 11·4 per cent. The possible practical efficiency is $17\frac{1}{2}$ per cent. to 20 per cent. Only 17 per cent. of the plants were saving 15 per cent. or more of the coal-bill, and more than 30 per cent. of the plants were saving less than 10 per cent. The fault does not lie with the economiser as an appliance, but is due to the fact that the economical generation of steam is not understood, and economisers are often not installed on correct lines. The authors estimate that a saving in this country of from 7,000,000 to 10,000,000 tons of coal per annum could be obtained by the use of economisers installed on correct scientific lines.

THE Decimal Association, 212 and 213 Finsbury Pavement House, Finsbury Pavement, London, E.C.2, has published in pamphlet form the article on "The Metric System and Decimal Coinage" contributed by Mr. Harry Allcock to the issue of NATURE for June 6, 1918. It will be remembered that the article was concerned with the attitude towards the metric system of weights and measures and decimal coinage taken by Lord Balfour of Burleigh's Committee on Commercial and Industrial Policy after the War, and it was shown that the decisions arrived at were open to serious criticism.

DR. L. L. FERMOR has pointed out to us, in connection with our notice of his recent paper on hollandite (NATURE, vol. ci., p. 392), that he used the term "bipyramidal" as a synonym for the older "pyramidal" in the paper itself. He also shows that the name "romanèchite" is correctly accented, according to French usage, although derived from the place-name Romanèche, a good analogy being the three words *cher*, *chère*, and *chéri*.

THE LIBRARY PRESS, LTD. (26 Portugal Street, W.C.2), will publish shortly a translation, by B. Miall, of Prof. J. Amar's "The Physiology of Industrial Organisation and the Re-employment of the Disabled." The book is being edited by Prof. A. F. Stanley Kent, who will supply to it an introduction and notes.

OUR ASTRONOMICAL COLUMN.

THE DARK-LINE SPECTRUM OF NOVA AQUILÆ.—Dr. J. Lunt has sent to NATURE some interesting details relating to the transient dark-line spectrum of Nova Aquilæ, as photographed at the Cape Observatory with the McClean spectrograph on June 10, 11, and 12. Apart from the bright and dark hydrogen spectrum which was in process of development, the spectrum was a continuous one crossed by a true absorption spectrum consisting principally of the enhanced lines of titanium, iron, chromium, strontium, calcium, magnesium, and helium. As shown by iron comparison spectra, the entire series of lines was displaced to the violet by an amount representing a radial velocity of 1500 km. per second (June 11 and 12). The violet edges of broad absorption lines, left partially uncovered by broad bright bands, do not appear to be in question, and the displacement is regarded as a true Doppler effect, due to the actual motion of a stellar body possessing an intensely heated atmosphere of metallic vapours. As in the case of other novæ, the fine dark H and K lines appeared nearly in their normal positions, but Dr. Lunt thinks it erroneous to consider their small displacements as representing the velocity of the star; it seems to him more probable that these lines do not originate in the nova itself, but in a nebulous mass lying in the line of sight. The residual incandescent and disturbed nebulous matter left behind after the passage of a rapidly moving star into a nebula would seem to offer a sufficient explanation of the bright-line spectrum. To account for the supposed enormous velocity of the nova, Dr. Lunt suggests that our own system may have a velocity comparable with those found for spiral nebulæ, and that the velocity may result, in part from this motion, and in part from the high velocity of a wandering star which has come from outside our system.

As in Nova Geminorum, there were two sets of dark hydrogen and helium lines during the earlier stages, the first of which showed the same displacement as the enhanced metallic lines. On June 15 the second set had become comparatively narrow and sharp, and showed a displacement equivalent to 2286 km. per second; except for the K line, these have no counterpart in the enhanced line spectrum, and their meaning remains obscure.

OBSERVATIONS OF MINOR PLANETS.—Shortly before the outbreak of war an important international scheme of work on these bodies had been arranged, to secure that all should be sufficiently observed without waste of labour through overlapping. Though the organisation was shattered by war, the observations continue. Marseilles Observatory undertook the circulation of ephemerides and information generally; the recently published *Journal des Observateurs* (vol. ii., No. 9) contains observations of sixty-six planets made during the past year by MM. Gonnessiat and Sy at Algiers Observatory. They include some positions of Juno and Vesta. It is a matter for regret that the Nautical Almanac has discontinued its ephemerides of the four principal asteroids. No predicted positions of them are now available except the approximate ones in the list published annually at Berlin.

A BRIGHT METEOR.—*Astr. Nach.* (No. 4961) cantains an account of a bright meteor which fell near Treysa, in Hessen, 9° 10′ E. Gr., 50° 55′ N., on 1916 April 3, 2h. 25m. G.M.T., the sun's altitude being 30° 50′. It was seen over a circle of 135 km. radius, and heard over a circle of 50–60 km. radius, besides a few isolated points at 100 km. distance. The earth-point was calculated, and a prolonged search at length revealed the meteor in a wood. It had made a hole 1·60 metres deep, at an inclination of 60° to the horizon, in a direction from N. 15° W. to S. 15° E., agreeing well with the calculated values. It was composed of iron, and weighed 63 kg. A. Wegener, whose calculations led to its discovery, estimated that its final velocity was in the neighbourhood of 1 or 2 km./sec. The position of the radiant inferred from the observations during flight is 357°+80°, and from the direction of the hole in the ground 20°+78°. The difference is only 5° in great circle.

THE HOT WORKING OF STEEL.

IT is generally held that, in order to obtain the best mechanical properties of which a steel is capable, it is necessary, after having cast it in the form of an ingot, to subject it to a large amount of deformation either by forging or rolling or pressing at a high temperature. Many official specifications, in fact, require a given reduction of the original section of the ingot. These requirements are expressed as "the coefficient